



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: David Norris and David N. Suggs
Assignee: Advanced Micro Devices, Inc.
Title: WAVETABLE AUDIO SYNTHESIZER DIGITAL SIGNAL
PROCESSOR ARCHITECTURE (AS AMENDED)
Serial No.: 09/352,659 Filed: July 6, 1999
Examiner: Not assigned Group Art Unit: Not assigned
Atty. Docket No.: M-4808-3C US Client Ref.: TT0451 C3

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San Jose, California
February 4, 2000

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INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Pursuant to the guidelines for Information Disclosure Statements, 37 C.F.R. §§ 1.97-1.98, attached hereto is PTO Form 1449 (11 sheets) with references listed for consideration by this office. In accordance with 37 C.F.R. § 1.98(a), copies of the listed references are being provided.

In addition, citation of the above documents shall not be construed as:

1. an admission that the documents are necessarily prior art with respect to the instant invention;
2. a representation that a search has been made, other than as described above; or
3. an admission that the information cited herein is, or is considered to be, material to patentability as defined in § 1.56(b).

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REMARKS

The following references listed on PTO Form 1449 were cited, are of record, or otherwise pertain to U.S. patent application Serial Nos. 08/333,389 (now abandoned); 08/333,398 (now abandoned); 08/333,461 (now abandoned); 08/333,536 (now U.S. Patent No. 5,659,466); 08/333,562 (now U.S. Patent No. 5,742,695); 08/333,564 (now U.S. Patent No. 5,668,338); 08/334,462 (now abandoned); 08/334,463 (now abandoned); 08/399,951 (now abandoned); 08/516,052 (now U.S. Patent No. 5,753,841); 08/604,558 (now abandoned); 08/947,728 (now U.S. Patent No. 5,847,304); and International Patent Application Serial No. PCT/US95/14254. These patent applications are assigned to Advanced Micro Devices, Inc. ("AMD"), the assignee of the above-identified patent applications, and are technically related to the present application.

For U.S. Patent Application Serial No. 08/333,389 (now abandoned)

1. Patent 5,144,676, Rossum (9/92)
2. EP Patent 0,535,839, Hetherington (4/93)
3. Patent 5,187,314, Kunimoto et al. (3/96)
4. Patent 5,406,022, Kobayashi (3/96)
5. Patent 4,731,851, Christopher (3/96)
6. Patent, 4,471,681, Nishimoto (3/96)

For U.S. Patent Application Serial No. 08/333,398 (now abandoned)

7. Patent 4,953,437, Starkey (9/90)
8. Patent 5,300,724, Medovich (4/94)
9. Patent 3,982,070, Flanagan (10/95)
10. Patent 4,384,170 Mozer et al. (10/95)

For U.S. Patent Application Serial No. 08/333,461 (now abandoned)

11. Patent 5,166,464, Sakata, et al (11/92)
12. John Snell, "Design a Digital Oscillator Which Will Generate Up to 256 Low Distortion Sine Waves in Real Time," April 1977, pp.4-25

For U.S. Patent Application Serial No. 08/333,536 (now U.S. Patent No. 5,659,466)

13. U.S. Patent No. 4,622,877, Strong (11/86)
14. U.S. Patent No. 4,649,783, Strong, et al (3/87)
15. U.S. Patent No. 4,201,105, Alles (5/90)
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17. Patent 3,515,792, Deutsch (2/96)

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18. Patent 4,539,885, Ezawa (9/85)

19. Patent 4,573,389, Suzuki (3/86)

20. Patent 4,998,281, Sakata (3/91)

21. Patent 5,243,124, Kondratiuk, et al (9/93)

For U.S. Patent Application Serial No. 08/334,462 (now abandoned)

22. Patent 4,864,625, Hanzawa (9/89)

23. Patent 5,111,530, Kutaragi, et al (5/92)

24. Patent 5,218,710, Yamaki, et al (6/93)

25. Patent 5,530,862, Jones, et al. (6/96)

26. Patent 5,613,147, Okamura, et al (3/97)

27. Patent 5,689,080, Gulick, et al (11/97)

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28. Patent 4,133,242, Nagai, et al (1/79)

29. Patent 4,472,993, Futamase, et al (9/84)

30. Patent 4,506,579, Rossum (3/85)

31. Patent 4,569,268, Futamase, et al (2/86)

32. Patent 4,719,833, Katoh, et al (1/88)

33. Patent 4,843,938, Hideo (7/89)

34. Patent 4,947,723, Kawashima, et al (8/90)

35. Patent 4,916,996, Suzuki et al. (4/90)

36. Patent 5,194,681, Kudo (3/93)

37. Patent 5,210,639, Redwine, et al. (5/93)

38. "Build a CHORUS-DELAY," Chorus, Analog Delay, ADT, Flanger, Vibrato, Guitar Player, Jan. 1982, pp. 26-34.

39. "Designing Multi-Channel Reverberators," by John Stautner and Miller Puckette, pp. 569-582 (1989).

40. "JAZZ16™ CHIPSET," Media Vision, Inc., pp. 1-52, 1-22, 1-14, schematics, bill of materials, and p. 23 (Date not available)

41. "Musical Applications of Microprocessors," by Hal Chamberlin, Hayden Book Company, Second Edition (1985), Chapters 1, 2, 4, 13, 14, 17 and 19-21.

42. "OPL3, YMF262, FR Operator Type L3," Yamaha LSI, YMF262 Application Manual, Catalog No. LSI-6MF2622, pp. 1-31 (1992.4)

43. "Proposal for Standardized Audio Interchange Formats," IMA Compatibility Project, Version 2.12 (April 24, 1992), pp. 1-23.

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44. "SC18000/SC18005 Multimedia System Controller," Sierra Semiconductor, Rev. 0.92, pp. 1-23 (Date not available).
45. "SC18024 ARIA™ Sound Processor," Sierra Semiconductor, Rev. 1.0, pp. 1-15 (Date not available).
46. "SC18050 Aria Basic Sound ROM," Sierra Semiconductor, Rev. 0.91, pp. 1-3 (Date not available).
47. "SC18051 1/2 Megabyte Sound ROM," Sierra Semiconductor, Rev. 1.0, pp. 1-3 (Date not available).
48. "SC18052 1 Megabyte Sound ROM," Sierra Semiconductor, Rev. 1.0, pp. 1-3 (Date not available).
49. "YMF262, FM Operator Type L3 (OPL3)," Yamaha LSI, Catalog No. LSI-4MF2622, pp. 1-19 (1991.10).
50. "YMZ263, Multimedia Audio & Game Interface Controller (MMA)," Yamaha LSI, Rev. 7/1/92, pp. 1-33.
51. Application Note, "A Tutorial on MIDI and Music Synthesis, Music Synthesis," by Jim Heckroth, Crystal Semiconductor Corp., AN27REV1, pp. 1-6 (Aug. 1993).
52. Application Note, "Wave Table MIDI Synthesizer Solutions, CS8905 and CS9203," by Jim Heckroth, Crystal Semiconductor Corp., AN26REV1, pp. 1-7 (Aug. 1993).
53. Article in "The Music Machine," Ed. Roads, The Mit Press, p. 436-437 (1989).
54. Digital Oscillator Chip, Integrated Circuit Systems, Inc., ICS 1261 (DOC1), pp. 1-12 (Date not available).
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57. Documentation regarding AVS Group NXPR016 Chipset (Date not available).
58. ES 5506 "OTTO", Ensoniq Soundscape™ WaveTable Synthesizer, Rev. 2.1, pp. 1-48 (Date not available).
59. Handbook for Sound Engineers (The new audio cyclopedia) Glen Ballow, editor, Howard W. Sams & Company, pp. 37-38, 158-159 and pp. 626-627, First Edition Third Printing 1988.
60. IBANEZ Model No. DM1000 Block Diagram (Date not available).
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62. OmniWave™ Multimedia Audio, by Samsung Semiconductor, Advance Information, KS0161, pp. 1-8 (Rev. A, Nov. 1994)
63. Preliminary Product Information, "Advanced Music Synthesizer, CS9203," Crystal Semiconductor Corp., DS117PP1, pp. 1-18 (Aug. 1993).
64. Preliminary Product Information, "CDBGMR4 Music Synthesis Eval. Board," Crystal Semiconductor Corp., DS127PP1, pp. 1-24 and schematics (Aug. 1993).
65. Preliminary Product Information, "Programmable Music Processor, CS8905," Crystal Semiconductor Corp., DS116PP1, pp. 1-19 (Aug. 1993).
66. Preliminary specification, "Stereo continuous calibration DAC, TDA1545A," Phillips Semiconductors, pp. 4-212 to 4-229 (March 1993).
67. Preliminary, "YMF278-F (OPL4), 4 Operator FM and WAVE Synthesis Chip," Yamaha LSI, Yamaha Corp., Catalog No. LS1278F, Version 1.01 (2/1/93), pp. 1-31
68. U.S. Patent Application Serial No. 072,838, entitled "Wave Table Synthesizer," by Travers, et al.

For U.S. Patent Application Serial No. 08/399,951 (now abandoned)

69. Patent 4,344,347, Faulkner (8/82)
70. Patent 4,201,109, Kitagawa (1/96)
71. Patent 4,524,668, Tomisawa et al. (1/96)

For U.S. Patent Application Serial No. 08/516,052 (now U.S. Patent No. 5,753,841)

72. Patent 4,644,840, Franz, et al. (2/87)
73. Patent 5,393,926, Johnson (2/94)
74. Patent 5,418,321, Keller et al. (5/95)
75. Patent 5,442,127, Wachi, et al. (8/95)

For U.S. Patent Application Serial No. 08/604,558 (now abandoned)

76. EP A0 474177 (3/91)
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For U.S. Patent Application Serial No. 08/947,728 (now U.S. Patent No. 5,847,304)

78. Patent 4,508,001, Suzuki (4/85)

For International Patent Application Serial No. PCT/US95/14254

79. Patent 5,111,727, Rossum (5/92)
80. Patent 5,342,990, Rossum (8/94)
81. EPA0 126,962, Wersi Electronic GMBH & CO KG (12/5/84)
82. EPA0 463,411, Casio Computer Co., Ltd (1/2/92).

All necessary copies of the above-identified references are provided in three categories:

- (i) U.S. patents; (ii) international patents and applications; and (iii) other documents. The U.S.

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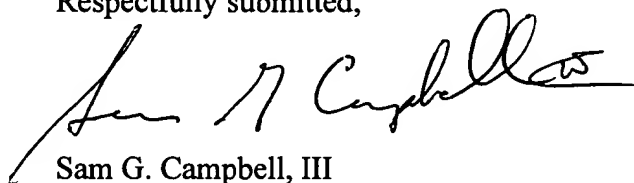
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and international patents are organized by lowest to highest patent number. The "other documents" are organized alphabetically by the first named author.

Applicants respectively submits that the invention in the above-identified application distinguishable over the references know to Applicant and disclosed in the above-statement.

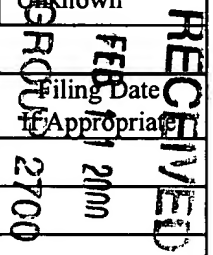
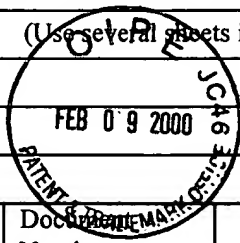
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on <u>February 4</u> , 2000.	
<u>Sam G. Campbell, III</u> Attorney for Applicants	<u>2,4,00</u> Date of Signature

Respectfully submitted,

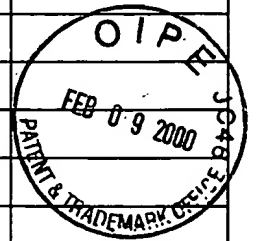


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U.S. Department of Commerce, Patent and Trademark Office					Atty Docket No.		Serial No.	
					M-4808-3C US		09/352,659	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT					Applicant(s)			
(Use several sheets if necessary)					Norris, David E.; Suggs, David N.			
					Filing Date		Group	
					July 6, 1999		Unknown	
U.S. Patent Documents								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate	
	AA	3,515,792	Jun. 1970	Deutsch	84	1.23		
	AB	3,982,070	Sep. 1976	Flanagan	179	1		
	AC	4,133,242	Jan. 1979	Nagai, et al	84	1.13		
	AD	4,201,105	May 1990	Alles	84	1.01		
	AE	4,201,109	May 1990	Kitagawa	84	1.26		
	AF	4,344,347	Aug. 1982	Faulkner	84	1.26		
	AG	4,384,170	May, 1983	Mozer, et al.	179	1		
	AH	4,471,681	Sept. 1984	Nishimoto	84	1.23		
	AI	4,472,993	Sept. 1984	Futamase, et al	84	1.23		
	AJ	4,506,579	Mar. 1985	Rossum	84	1.01		
	AK	4,508,001	Apr. 1985	Suzuki	84	1.01		
	AL	4,524,668	Jun. 1985	Tomisawa, et al.	84	1.24		
	AM	4,539,885	Sept. 1985	Ezawa	84	1.25		
	AN	4,569,268	Feb. 1986	Futamase, et al	84	1.24		
	AO	4,573,389	Mar. 1986	Suzuki	84	1.26		
	AP	4,622,877	Nov. 1986	Strong	84	1.01		
	AQ	4,644,840	Feb. 1987	Franz, et al	84	1.01		
	AR	4,649,783	Mar. 1987	Strong, et al	84	1.01		
	AS	4,719,833	Jan. 1988	Katoh, et al	84	1.01		
	AT	4,731,851	Mar. 1988	Christopher	381	104		
	AU	4,843,938	July 1989	Hideo	84	1.19		
	AV	4,864,625	Sep. 1989	Hanzawa, et al	381	61		
	AW	4,916,996	April 1990	Suzuki, et al	84	603		
	AX	4,947,723	Aug. 1990	Kawashima, et al	84	603		
	AY	4,953,437	Sept. 1990	Starkey	84	603		
	AZ	4,998,281	Mar. 1991	Sakata	381	63		
	BA	5,111,530	May 1992	Kutaragi, et al	395	20		
	BB	5,111,727	May 1992	Rossum	84	603		
	BC	5,144,676	Sept. 1992	Rossum	381	118		
	BD	5,166,464	Nov. 1992	Sakata, et al	84	662		
	BE	5,187,314	Feb. 1993	Kunimoto, et al.	84	626		
	BF	5,194,681	Mar. 1993	Kudo	84	603		



	BG	5,210,639	May 1993	Redwine, et al	395	425	
	BH	5,218,710	June 1993	Yamaki, et al	395	800	
	BI	5,243,124	Sept. 1993	Kondratiuk, et al	84	624	
	BJ	5,300,724	April 1994	Medovich	84	604	
	BK	5,342,990	Aug. 1994	Rossum	84	603	
	BL	5,393,926	Feb. 1994	Johnson	84	610	
	BM	5,406,022	Apr. 1995	Kobayashi	81	622	
	BN	5,418,321	May 1995	Keller, et al	84	606	
	BO	5,440,740	Aug. 1995	Chen, et al.	395	650	
	BP	5,442,127	Aug. 1995	Wachi, et al	84	603	
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	BR	5,613,147	Mar. 1997	Okamura, et al	395	800	
	BS	5,689,080	Nov. 1997	Gulick	84	604	



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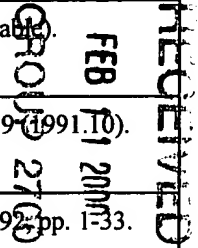
Foreign Patent Documents

							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
	BT	EP A 0126962	Dec. 1984	European				No
	BU	EP A 0463411	Jan. 1992	JP				
	BV	EP A 0535839	April 1993	European			Partial	
	BW	EP 0 474177 A2		European				
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	BZ	"Designing Multi-Channel Reverberators," by John Stautner and Miller Puckette, pp. 569-582 (1989).
	CA	"JAZZ16™ CHIPSET," Media Vision, Inc., pp. 1-52, 1-22, 1-14, schematics, bill of materials, and p. 23 (Date not available)
	CB	"Musical Applications of Microprocessors," by Hal Chamberlin, Hayden Book Company, Second Edition (1985), Chapters 1, 2, 4, 13, 14, 17 and 19-21.
	CC	"OPL3, YMF262, FM Operator Type L3," Yamaha LSI, YMF262 Application Manual, Catalog No. LSI-6MF2622, pp. 1-31 (1992.4)
	CD	"Proposal for Standardized Audio Interchange Formats," IMA Compatibility Project, Version 2.12 (April 24, 1992), pp. 1-23.
	CE	"SC18000/SC18005 Multimedia System Controller," Sierra Semiconductor, Rev. 0.92, pp. 1-23 (Date not available).
	CF	"SC18025 ARIA™ Sound Processor," Sierra Semiconductor, Rev. 1.0, pp. 1-15 (Date not available).
	CG	"SC18050 Aria Basic Sound ROM," Sierra Semiconductor, Rev. 0.91, pp. 1-3 (Date not available).

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	CI	"SC18052 1 Megabyte Sound ROM," Sierra Semiconductor, Rev. 1.0, pp. 1-3 (Date not available).
	CJ	"YMF262, FM Operator Type L3 (OPL3)," Yamaha LSI, Catalog No. LSI-4MF2622, pp. 1-19 (1991.10).
	CK	"YMZ263, Multimedia Audio & Game Interface Controller (MMA)," Yamaha LSI, Rev. 7/1/92, pp. 1-33.
	CL	Application Note, "A Tutorial on MIDI and Music Synthesis, Music Synthesis," by Jim Heckroth, Crystal Semiconductor Corp., AN27REV1, pp. 1-6 (Aug. 1993).
	CM	Application Note, "Wave Table MIDI Synthesizer Solutions, CS8905 and CS9203," by Jim Heckroth, Crystal Semiconductor Corp., AN26REV1, pp. 1-7 (Aug. 1993).
	CN	Article in "The Music Machine," Ed. Roads, The Mit Press, p. 436-437 (1989).
	CO	Digital Oscillator Chip, Integrated Circuit Systems, Inc., ICS 1261 (DOC1), pp. 1-12 (Date not available).
	CP	Digital Sound Generator (DOC II), ICS1399, Integrated Circuit Systems, Inc., pp. 1-10 (Date not available).
	CQ	Digital Sound Generator (DOC II), ICS1399, Integrated Circuit Systems, Inc., pp. 21-42 (Date not available).
	CR	Documentation regarding AVS Group NXPR016 Chipset (Date not available).
	CS	ES 5506 "OTTO", Ensoniq Soundscape™ WaveTable Synthesizer, Rev. 2.1, pp. 1-48 (Date not available).
	CT	Handbook for Sound Engineers (The new audio cyclopedia) Glen Ballow, editor, Howard W. Sams & Company, pp. 37-38, 158-159 and pp. 626-627, First Edition Third Printing 1988.
	CU	IBANEZ Model No. DM1000 Block Diagram (Date not available).
	CV	Integrated Circuit Systems, Inc., Digital Sound Generator (DOC II), ICS1399, Package of Technical Information (Date not available).
	CW	OmniWave™ Multimedia Audio, by Samsung Semiconductor, Advance Information, KS0161, pp. 1-8 (Rev. A, Nov. 1994)
	CX	Preliminary Product Information, "Advanced Music Synthesizer, CS9203," Crystal Semiconductor Corp., DS117PP1, pp. 1-18 (Aug. 1993).
	CY	Preliminary Product Information, "CDBGMR4 Music Synthesis Eval. Board," Crystal Semiconductor Corp., DS127PP1, pp. 1-24 and schematics (Aug. 1993).
	CZ	Preliminary Product Information, "Programmable Music Processor, CS8905," Crystal Semiconductor Corp., DS116PP1, pp. 1-19 (Aug. 1993).
	DA	Preliminary specification, "Stereo continuous calibration DAC, TDA1545A," Phillips Semiconductors, pp. 4-212 to 4-229 (March 1993).



	DB	Preliminary, "YMF278-F (OPL4), 4 Operator FM and WAVE Synthesis Chip," Yamaha LSI, Yamaha Corp., Catalog No. LS1278F, Version 1.01 (2/1/93), pp. 1-31
	DC	Snell, John. "Design of a Digital Oscillator Which Will Generate Up to 256 Low Distortion Sine Waves in Real Time," April 1977, pp. 4-25
	DD	U.S. Patent Application Serial No. 072,838, entitled "Wave Table Synthesizer," by Travers, et al.
Examiner		Date Considered
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.		

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